Julius Althaus M.D.
with the kind regards
of the Author Wm Adams

# OBSERVATIONS

ON

# CONGENITAL DISPLACEMENT

(THE SO-CALLED CONGENITAL DISLOCATION)

# AT THE HIP-JOINT;

AND THE

SUCCESS OF DOCTOR BUCKMINSTER BROWN'S TREATMENT BY RECUMBENCY WITH EXTENSION FOR TWO YEARS.

BY

WILLIAM ADAMS, F.R.C.S.,

CONSULTING SURGEON TO THE GREAT NORTHERN CENTRAL HOSPITAL; ALSO TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, AND THE NATIONAL ORTHOPÆDIC HOSPITAL, ETC.

*Read at the Meeting of the American Orthopædic Congress, held in Chicago in September, 1895.*

Fig. 1

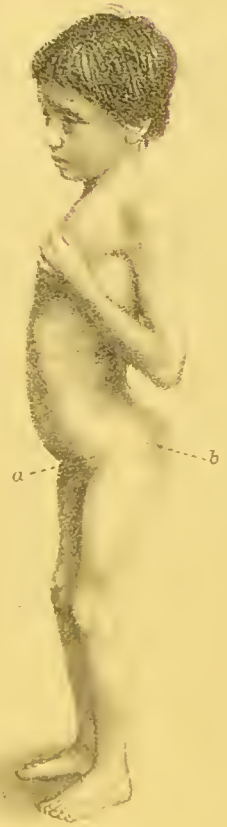



Fig. 2


Fig 3

Horace Knight lith. from Photo.

West, Newman & Co imp.

## DESCRIPTION OF PLATE I.

THREE views of a case of double congenital displacement of the hip—in a girl of about eight years of age—showing the external appearances generally met with.

FIG. 1.—*Lateral view*, shows the great trochanter (*b*) to be considerably above the anterior superior spinous process (*a*).

Also considerable lordosis, and a corresponding prominence of the stomach.

FIG. 2.—*Posterior view*, shows the prominence of the great trochanter on either side; *letters a, a*, in the displaced position.

Also a slight tendency to lateral curvature of the spine.

FIG. 3.—*Front view*, shows an unusual separation of the thighs at the upper part, and a slight inclination to knock-knees.

Plate II

Fig. 1


Fig. 2


H. ... Knight lith. from Photo.

## DESCRIPTION OF PLATE II.

Two views of a case of double congenital displacement of the hip—in a boy aged seven years—showing the external appearances generally met with. From a photograph by Mayall.

Fig. 1.—*Lateral* or *three-quarter view*, shows the great trochanter (*b*) to be considerably above the anterior superior spinous process (*a*).

Also considerable lordosis, and a corresponding prominence of the stomach.

Fig. 2.—*Posterior view*, shows the prominence of the great trochanter on either side; *letters a, a*, in the displaced position.

Also an unusual separation of the thighs, which appear to be unnaturally shortened. No lateral curvature of the spine is apparent.

Fig. 1.

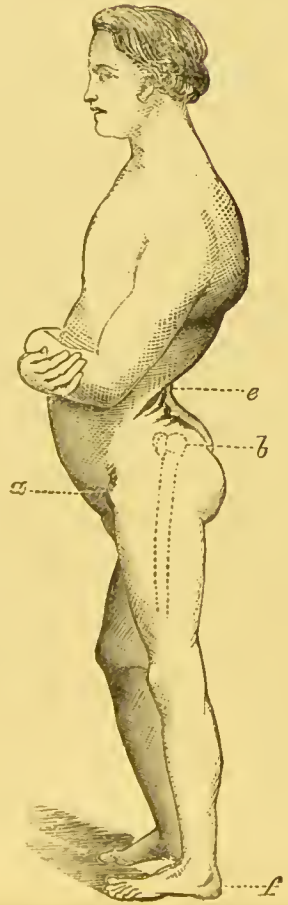



Fig. 2.

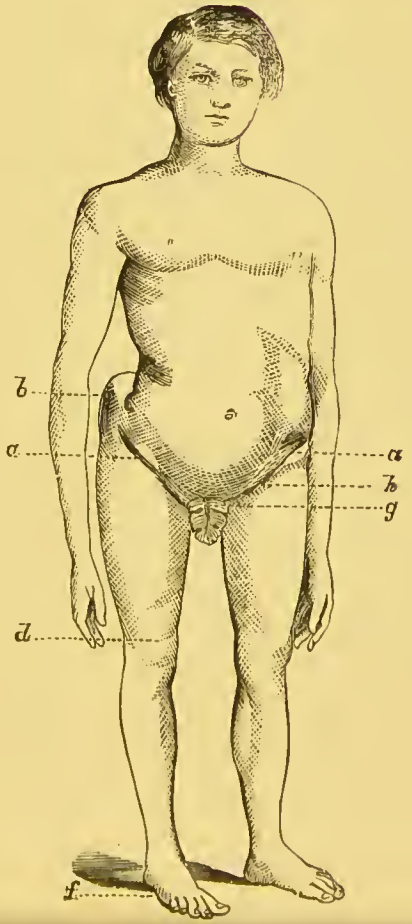
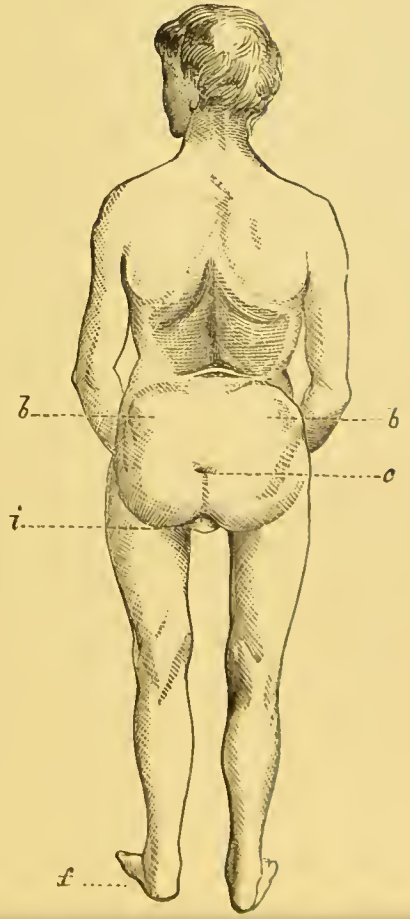



Fig. 3.



## DESCRIPTION OF PLATE IIa.

Three views of a case of double congenital displacement of the hip, in an extremely severe form, the head of the femur being displaced upwards on either side, to a greater extent than I have seen in any other case. In a young man, Benjamin Gott, æt. 19 years. Drawings copied from Dr. Carnochan's Treatise on "Congenital Dislocations of the Head of the Femur," New York, 1850—case described at page 107. This was probably the first case ever diagnosed and described in England, by Dr. Carnochan, who published the case in 'The Lancet' in 1844, having previously exhibited the boy and pointed out all the chief characters of this affection to the surgical staff of St. Thomas's Hospital, in my room, when I was curator of the Museum. At the suggestion of Mr. J. F. South, a complete model of this boy was taken by Mr. Kearney, the artist and modeller attached to the Hospital. The statue got broken when the Hospital was transferred to its present site, and the central portion of it now only remains in the Museum, so that the effects of this double displacement upon the general configuration of the body, and in the apparently altered proportions of the arms and legs, can no longer be seen.

Fig. 1.—*Lateral view*, shows the great trochanter (*b*) to be considerably above the anterior superior spinous process (*a*).

Also an extreme amount of lordosis (*c*), with a corresponding prominence of the stomach.

Fig. 2.—*Anterior view*, shows an apparent elongation of the arms, in consequence of a shortening of the thigh—the tips of the fingers reaching to within a short distance of the knee-joints.

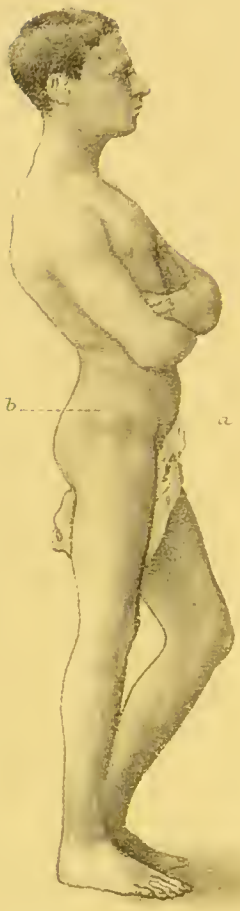
The thighs also are widely separated at the upper part.

Fig. 3.—*Posterior view*, shows the prominence of the great trochanter on either side (*b*) at an unusual height.

Also an extreme amount of lordosis.

Fig. 1


Fig 2




J Knight lith.

West Newman & Co imp

## DESCRIPTION OF PLATE IIb.

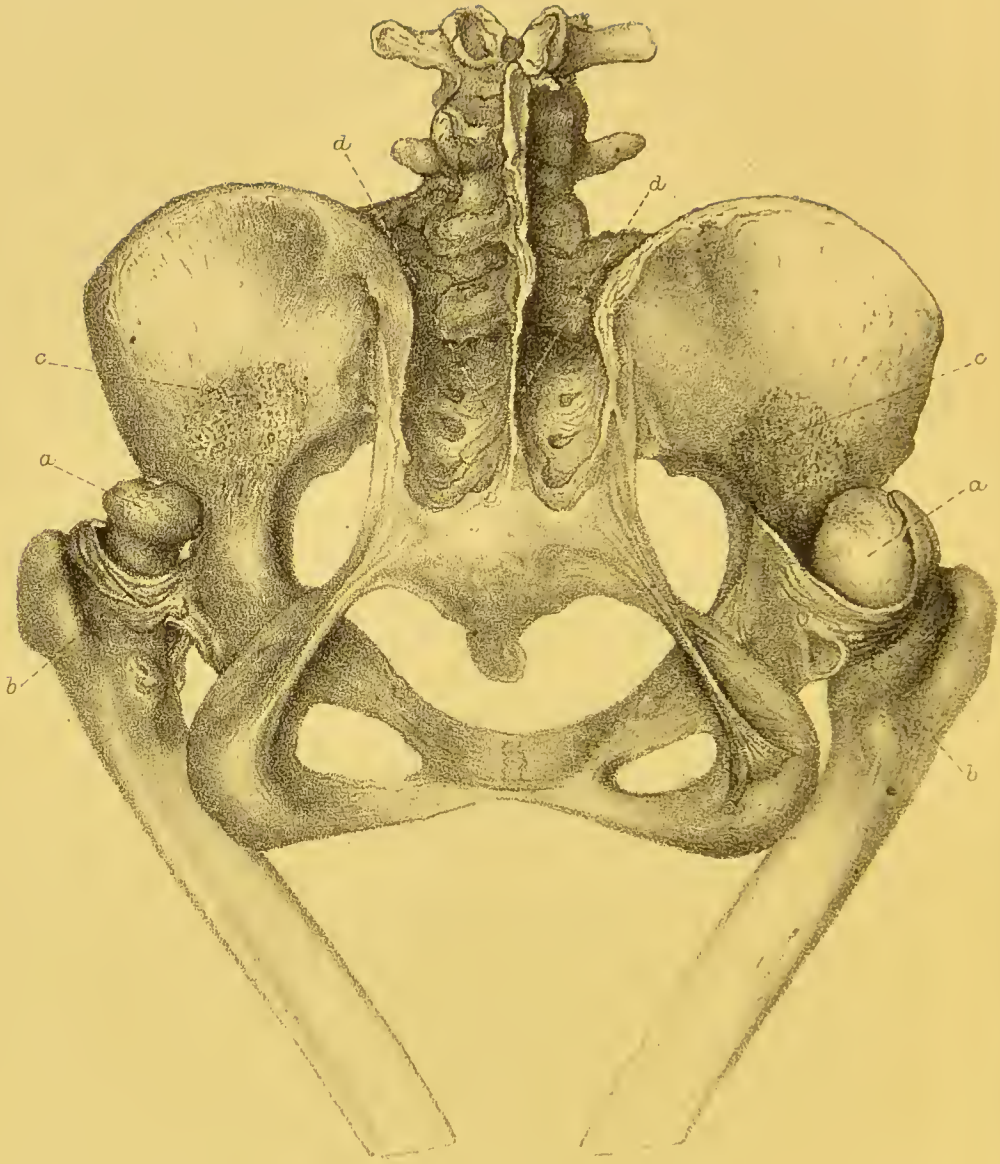
Two views of a case of congenital displacement of the hip, on one side only—the right—showing tilting of the pelvis and the production of lateral curvature of the spine. Drawn from a photograph of a young man æt. 18 years.

Fig. 1.—*Posterior view*, shows a very marked prominence of the great trochanter on the right side, evidently displaced on to the dorsum illi, with tilting of the pelvis. The right thigh (*l*) is smaller than the left, and apparently shorter. There is also a lateral curvature of the spine to the left in the lumbar region, and to the right in the middle dorsal region. In order to preserve the equilibrium of the body, and bring the shoulders to a level, the photographer placed three books under the right foot, to compensate for at least $2\frac{1}{2}$ in. of shortening.

Fig. 2.—Side view of the same case as Fig. 1, showing the patient resting on the affected limb, the shortening of which renders necessary the flexed position of the left knee.

The great trochanter (*b*) is considerably above the anterior superior spinous process of the ilium (*a*).

Some lordosis also exists in the lumbar region.




Horace Knight lith ad nat

West, Newman & Co imp

## DESCRIPTION OF PLATE III.

Drawing of an adult female pelvis with portions of femora attached, in St. Bartholomew's Hospital Museum, No. 1050, believed to be an example of congenital displacement of both hip-joints, but without history. The specimen has been dried with the ligaments preserved.

*a a*.—Head of femur on either side, in its displaced position on the dorsum ilii, but still within the capsular ligament *b b*, which has been laid open at the upper and back part. No trace of ligamentum teres. Head of femur on either side much diminished in size and altered in shape, the left to a much greater extent than the right.

*c c*.—A slightly roughened and depressed surface of ilium, a little above the upper border of the sciatic notch where the head rested on either side. Surface of ilium generally smooth, and ridges denoting the attachment of muscles absent.

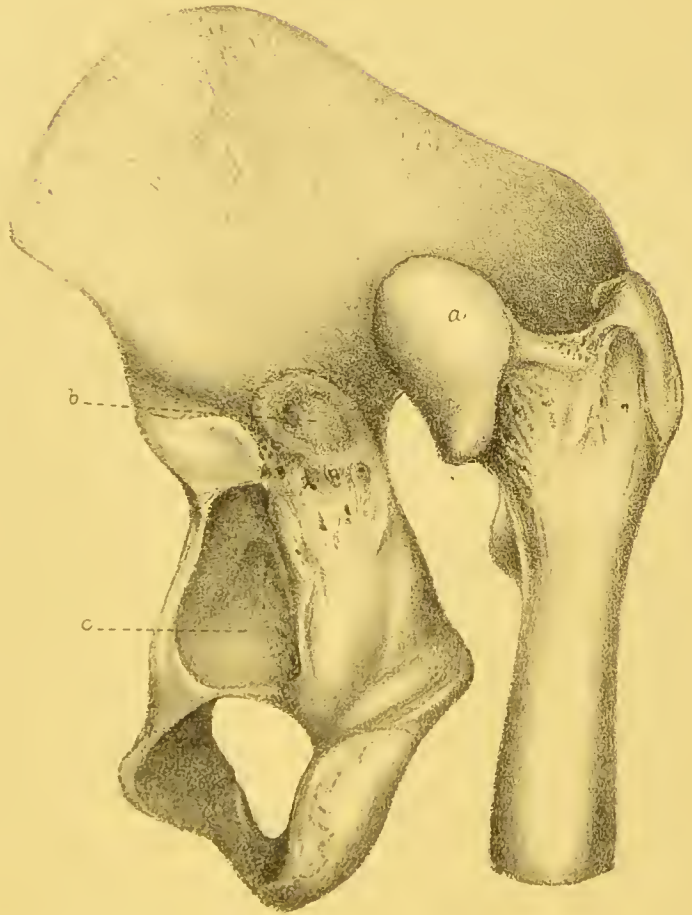
The acetabula, not shown in drawing, are represented by triangular depressions, with flattened margins; the upper portions of these cavities naturally formed by the projecting lip of the iliac segment of the acetabulum being entirely absent.

The lower portion of the innominate bone on either side, including the region which should naturally be occupied by the acetabulum, is narrowed and elongated, and the sciatic notch is therefore much altered in shape. The tuberosities of the ischia are everted and somewhat twisted.

*d*.—The sacrum shown to have assumed almost a horizontal position by the tilting of the pelvis and consecutive lordosis.

Plate IV.

Fig. 1




S.G Shattock del. ad nat

Fig. 2


West, Newman & Co. Lith

## DESCRIPTION OF PLATE IV.

Drawings of two specimens in St. Thomas's Hospital Museum, Nos. 42 and 43, Section D, each consisting of the innominate bone, with upper portion of femur, from the same subject, a girl aged 16. One has been completely macerated, all ligaments removed, and put up dry—fig. 1. The other partly macerated, with the capsular ligament dissected and remaining intact, put up as a wet preparation—fig. 2. These specimens are described in the Catalogue as examples of "dislocation of the femur from hip disease," but they present all the appearances described as characteristic of congenital displacement, and there is no evidence of disease having existed. The body was brought to the dissecting-room, but there is no history of the case.

Fig. 1, No. 42 in Catalogue.—The left innominate bone and upper part of femur.

*a*.—Head of femur, very much reduced in size and misshapen, being flattened in its lower and posterior aspect; its surface presents a thin layer of smooth compact osseous tissue; the neck of the femur is shortened and a little twisted.

*b*.—A flattened, circular, medallion-like surface, slightly raised on the dorsum ilii near to the margin of the sciatic notch, at its upper part, upon which the head of the femur had chiefly rested. In this case it is mentioned that both thighs were flexed and contracted at the hip-joint, so that movement had become restricted.

*c*.—An elongated triangular depression, with flattened margins representing the acetabulum. The naturally projecting lip of the iliac segment of the acetabulum is entirely absent, nor is there any projecting margin on either side of the triangular depression.

The lower portion of the innominate bone, including the region which should naturally be occupied by the acetabulum, is narrowed and elongated; consequently the shape of the sciatic notch is much altered. The tuberosity and ascending ramus of the ischium are both everted and twisted. The surface of the ilium is very smooth, and the ridges or curved lines denoting the attachment of muscles absent.

Fig. 2, No. 43 in Catalogue.—The right innominate bone and upper part of femur.

*a*.—The head of the femur, displaced on to the dorsum ilii towards the upper margin of the sciatic notch, and closely invested by the capsular ligament *b*, in an extremely thickened and dense condition. The tuberosity of the ischium is everted and twisted. The surface of the ilium is very smooth. The capsular ligament is also shown to be greatly elongated, extending from the upper border of the obturator foramen below, to cover the head of the femur above, in its displaced position on the dorsum ilii.


S. G. Shattock del. ad nat.

West, Newman & Co lith.

## DESCRIPTION OF PLATE V.

Drawing of the same specimen as represented in Plate IV. fig. 2, with the capsular ligament laid open in front, in its entire length. This Mr. Shattock was kind enough to do at my suggestion.

*a*.—Head of femur in its displaced position on the dorsum ilii, still retained within the capsular ligament *b b* in a thickened and dense condition. The capsular ligament is also seen to be greatly elongated, extending from the upper border of the obturator below, to cover the head of the femur above, in its displaced position on the dorsum ilii.

The head of the femur is diminished in size and altered in shape, being flattened in its inferior and posterior aspects, but not to the same extent as in the corresponding head of the femur shown in fig. 1, Plate IV. It is everywhere covered with a thin layer of healthy articular cartilage, and there is no trace of the ligamentum teres.

The imperfect cavity of the hip-joint within the capsular ligament is shown by the edges of the latter being kept open by bristles; its deep surface is irregular, and in its lower half the capsular ligament was depressed, or flattened, so as to diminish the cavity, which probably would not have been capable of receiving the head of the femur had any attempt been made by extension to have it drawn towards its natural position.

*c*.—The anterior superior *spinous* process of ilium seen to be below the level of the head of the femur, in consequence of the ascent of the latter.

Fig. 1.


Fig. 2


Horace Knight lith. ad nat

West, Newman & Co imp

## DESCRIPTION OF PLATE VI.

Drawings of a portion of the right innominate bone, and upper part of corresponding femur, in the Museum of Charing Cross Hospital, from a case described and published by the late Mr. Edwin Canton, Surgeon to the Hospital as long since as the year 1848, as one of congenital dislocation of both hip-joints. From a female aged 32. Drawn natural size.

Fig. 1.—Upper portion of femur.

*a*.—Head of femur diminished in size, and altered in shape, being somewhat flattened on its inferior and posterior aspects (not seen in drawing), but to a less extent than in some of the other cases. The surface is everywhere smooth, and presents a layer of compact osseous tissue. In the recent state Mr. Canton observes: "The head of the femur was coated by a bluish film of cartilage, which was continued over a superficial impression, marking the site of the absent pit for the ligamentum teres. This latter part was absent."

Fig. 2.—Portion of the innominate bone, especially exhibiting the triangular depression representing the acetabulum. The floor of this depression is very irregular. The base of the triangle is formed by the upper border of the obturator foramen *e*, which has been preserved in this specimen. The naturally projecting lip of the iliac segment of the acetabulum is entirely absent, nor is there any projecting margin on either side of the triangular depression.

*a*.—Portion of ilium sawn through horizontally, about on a level with the anterior inferior spinous process.

*b*.—Portion of the ischium sawn through.

*c*.—Spine of the ischium.

*d*.—Section made through the ramus of pubes into the obturator foramen.

The description of the case from which this specimen was removed is published in the 'Lancet,' vol. i. 1848, page 341; and is also rather more fully reported in the 'London Medical Gazette,' vol. i. 1848, page 559; in the 'Report of the Proceedings of the Westminster Medical Society,' March 18th, 1848, when Mr. Canton exhibited the specimen.

Fig.3

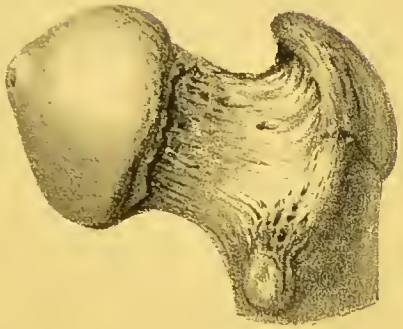


Fig.2.

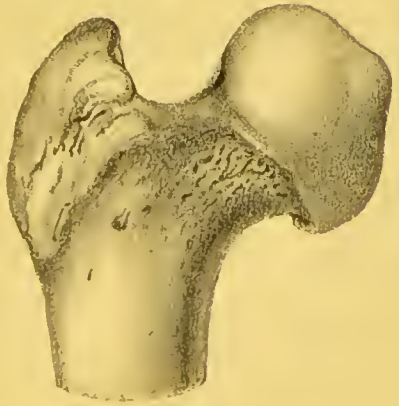
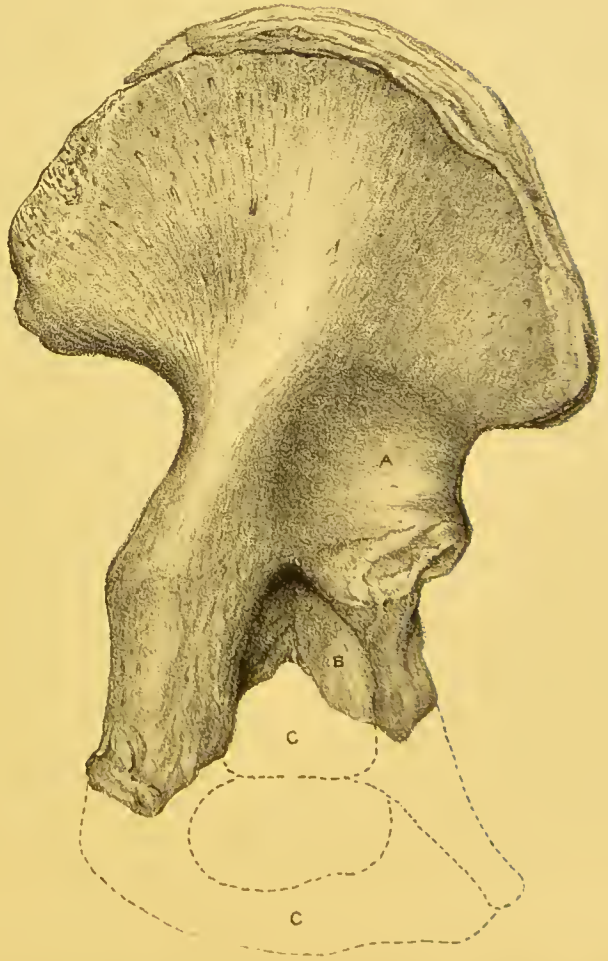


Fig.1.




T Goldart del ad nat

West Newman & Co lith

## DESCRIPTION OF PLATE VII.

Drawings of the right innominate bone and upper portion of corresponding femur, in St. Bartholomew's Hospital Museum, No. 1050A. A recent specimen, with reliable history of congenital displacement of the hip-joint, removed from the body of a girl, Catherine Gibbs, aged thirteen, who died in St. Bartholomew's Hospital, 7th April, 1884. She was very lame. The limping appeared after the walking period, and gradually increased without pain or suspicion of disease. She was the first child, but the labour was easy and natural.

Fig. 1.—Right innominate bone, imperfect in its lower portion, as during removal the saw was passed through the base of the triangular space representing the acetabulum, and close to the upper margin of the obturator foramen. The absent portion is indicated by the dotted line. The specimen put up as a wet preparation.

*a*.—Smooth circular depression on the dorsum ilii, covered with adherent periosteum, in which head of femur, covered by the capsular ligament, rested through life. The centre of this depression corresponds to a line drawn horizontally from a little above the anterior inferior spinous process, which its margin touches; and the upper border of the depression extends as high as a line drawn horizontally from the anterior superior spinous process of the ilium, so that the head of the femur was displaced in a direction upwards and forwards. This circular depression is immediately above and a little in front of the triangular depression with flattened edges, which represents the acetabulum (B), and only separated from it by a slight ridge of bone. The iliac segment of the acetabulum or rather its naturally projecting lip, which extends from a point below the anterior inferior spinous process of the ilium, obliquely backwards to the ischium, is

entirely absent, so that there is nothing to prevent the ascent of the head of the femur. The margins of the lower part of the triangular depression are also flattened. The lower portion of this triangular depression (*c*), including the margin of the obturator foramen, as well as portions of the ischium and pubic bones, also marked *c*, were not preserved.

The lower portion of the innominate bone, including the region which should naturally be occupied by the acetabulum, is narrowed and elongated; and the shape of the sciatic notch is consequently much altered. The surface of the ilium is generally smooth, and free from any lines or ridges denoting muscular attachments. No new bone has been thrown out anywhere, nor were there any traces of disease.

FIG. 2.—Upper part of femur from same case—anterior view. Head of femur diminished in size and altered in shape; flattened in lower half. It is everywhere covered with a layer of healthy articular cartilage. The ligamentum teres is completely absent, a little nipple-like elevation existing at its normal seat of attachment, with a pin-hole depression in its centre.

FIG. 3.—Posterior view of head and neck of femur, showing more distinctly the flattening of the head in its posterior and lower aspects, and the nipple-like elevation at the normal seat of attachment of the ligamentum teres, and the small depression in its centre. The neck of the bone is shortened and slightly twisted backwards upon its axis.

2


1


J.Knight ad nat lith.

West, Newman & Co imp

## DESCRIPTION OF PLATE VIII.

Drawings of left innominate bone, from an adult female, and upper portion of corresponding femur, in Museum of the Royal College of Surgeons, No. 1887, a very old dried specimen, without any history; but it presents all the appearances described as characteristic of congenital displacement of the hip-joint, and there is no evidence of disease having existed. The following description is copied from the 'Pathological Catalogue,' vol. ii., part 2, No. 1887:—"An os innominatum and a femur. The head of the femur, much reduced in size and altered in its form, was dislocated upon the dorsum of the ilium, on which its flattened inferior and internal surface rested on a shallow concave surface, about an inch above and behind the acetabulum. The two surfaces of bone are simply adapted to each other, neither of them is changed in texture by friction, nor is there any new bone formed round them. The axis of the shaft of the femur was directed almost horizontally forwards and inwards; and the lesser trochanter rested on a small, hard, and slightly elevated surface of bone at the posterior border of the acetabulum. The acetabulum is reduced to a small shallow triangular cavity, the reduction of size being the consequence chiefly of the thickening of its posterior wall. All the bones are thin and light, but they are hard, and there is no appearance of the disease having been in progress at the time of death."*

Fig. 1:—

*a*.—The shallow, concave, circular depression on the dorsum ilii, above described, in which the head of the femur appears to have rested—no doubt still within the elongated capsular ligament. This depression is situated about the centre of the dorsum ilii above the sciatic notch, so that the displacement of the

* From the museum of Joshua Brooks, Esq.

femur in this case was directly upwards and a little backwards.

*b.*—A smooth polished oval surface, on which the small trochanter, also having a smooth polished surface, seems to have played.

*c.*—"The shallow triangular cavity," above described, as representing the acetabulum. The naturally projecting lip of the iliac segment of the acetabulum is entirely absent, nor is there any projecting margin on either side of the triangular depression.

*d.*—The anterior inferior spinous process of the ilium remarkably twisted, with a deep smooth depression or groove below it, possibly made by the prolonged action of the displaced psoas and iliacus muscles. The lower portion of the innominate bone, including the region which should naturally be occupied by the acetabulum, is much narrowed and elongated; consequently the sciatic notch is much altered in shape. The tuberosity and ascending ramus of the ischium are both everted and twisted.

FIG. 2.—Upper portion of corresponding femur.

*a.*—Head of femur, very much reduced in size and altered in form; it is flattened, almost button-shaped, with a smooth undulating surface, covered with a thin layer of compact bone. The upper portion of the head indicated by the dotted line (*b*) has been broken off by accidents in the course of time. The exposed cancellous tissue is everywhere healthy, though in an atrophied condition. The neck of the bone is shortened and atrophied.

*c.*—The small trochanter, on which is an oval, flattened, and somewhat eburnated surface, which no doubt moved in contact with the polished surface shown in Fig. 1 (*b*).

1

2


J. Knight ad nat lith

West, Newman & Co. imp.

## DESCRIPTION OF PLATE IX.

Drawing of right innominate bone, from an adult female, and upper portion of the corresponding femur, in the Museum of the Royal College of Surgeons, No. 1888, without any history. It presents all the appearances described as characteristic of congenital displacement of the hip-joint, and there is no evidence of disease having existed, unless the changes in the head and neck of the femur, which are greater than seen in any other specimen, may be so regarded. The only description given in the 'Pathological Catalogue,' vol. ii., part 2, is as follows:—"No. 1888. A similar specimen, with the head of the femur more reduced in size. Presented by Gilbert W. Macmurdo, Esq., 1867."

Fig. 1.—The innominate bone very closely resembles the specimen No. 1887, as to the seat of the depression from the head of the femur on the central portion of the dorsum ilii (*a*), above the sciatic notch; the character of the triangular depression (*b*), representing the acetabulum, with the complete absence of the projecting lip of the iliac segment of the acetabulum, and also the absence of any projecting margin on either side of the triangular depression; also in the fact of the lower portion of the innominate bone, including the region which should naturally be occupied by the acetabulum, being much narrowed and elongated, producing a great alteration in the shape of the sciatic notch. The anterior inferior spinous process of the ilium is also remarkably twisted, and below it is a deep smooth depression, similar to that seen in the other specimen, No. 1887. The tuberosity and ascending ramus of the ischium are also both everted and twisted.

Fig. 2.—Upper third of femur, said to belong to this specimen, but its characters are so entirely different from all the other specimens of the same case, that a suspicion of its not belonging to the same class naturally arises. In this specimen the head and neck of the femur have both disappeared, and are only represented by a small, flattened and expanded portion of dense ivory-like bone, with overhanging lips—somewhat of a mushroom shape (*a*), at the base of what should be the neck of femur, *i. e.* a little above the small trochanter. These appearances very much resemble those occasionally met with in cases of chronic rheumatic arthritis, in which the atrophic changes predominate; and, so far as I know, they have not been met with or described in cases of congenital displacement of the hip-joint.

Fig 1

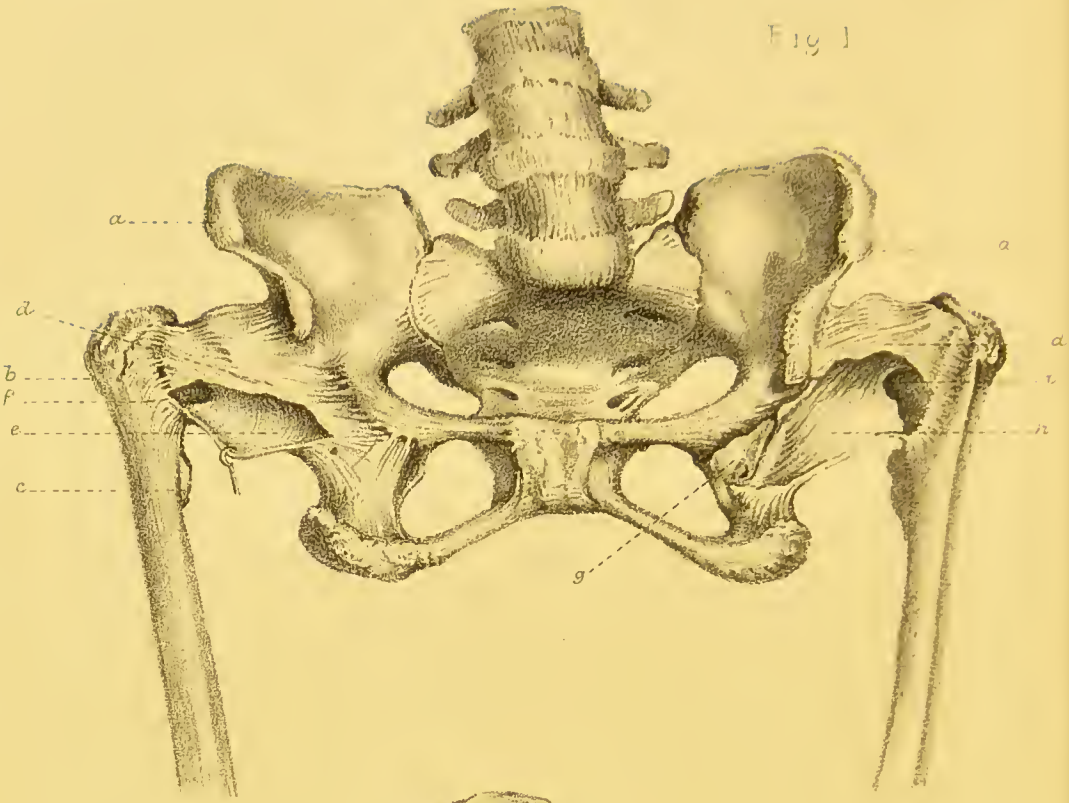
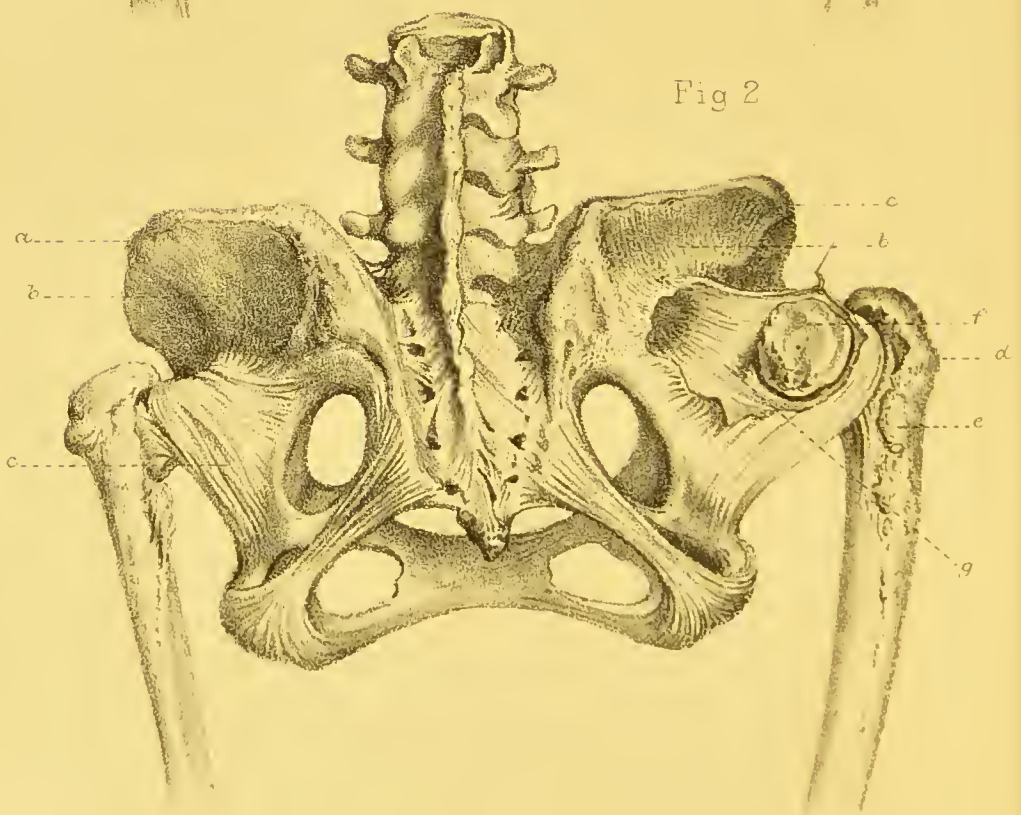



Fig 2




H Knight lith.

West Newman imp.

## DESCRIPTION OF PLATE X.

The two figures represented in this Plate, with the accompanying descriptions, are copied from Dr. Carnochan's work referred to in the text, Plates VI. and VII.

Fig. 1.—Front view of a dissection of a female pelvis, with double congenital dislocation of the femurs upon the dorsa of the ilia.

*a.*—Anterior and superior spinous process of the ilium.

*b.*—Trochanter major.

*c.*—Trochanter minor.

*d.*—Anterior part of the original capsular ligament.

*e.*—The original capsule laid open.

*f.*—The annular opening, by which the head of the femur escaped upon the dorsum ilii.

*g.*—The original acetabulum become now triangular.

*h.*—The cavity of the original capsule laid open by removal of its anterior wall.

*i.*—The neck of the femur grasped by the annular opening in the capsule through which the head passed.

Fig. 2.—Posterior view of a dissection of the same pelvis, with double congenital dislocation of the femur upon the dorsa of the ilia.

*a.*—The crest of the ilium.

*b.*—The dorsum ilii.

*c.*—Posterior surface of the new capsule entire.

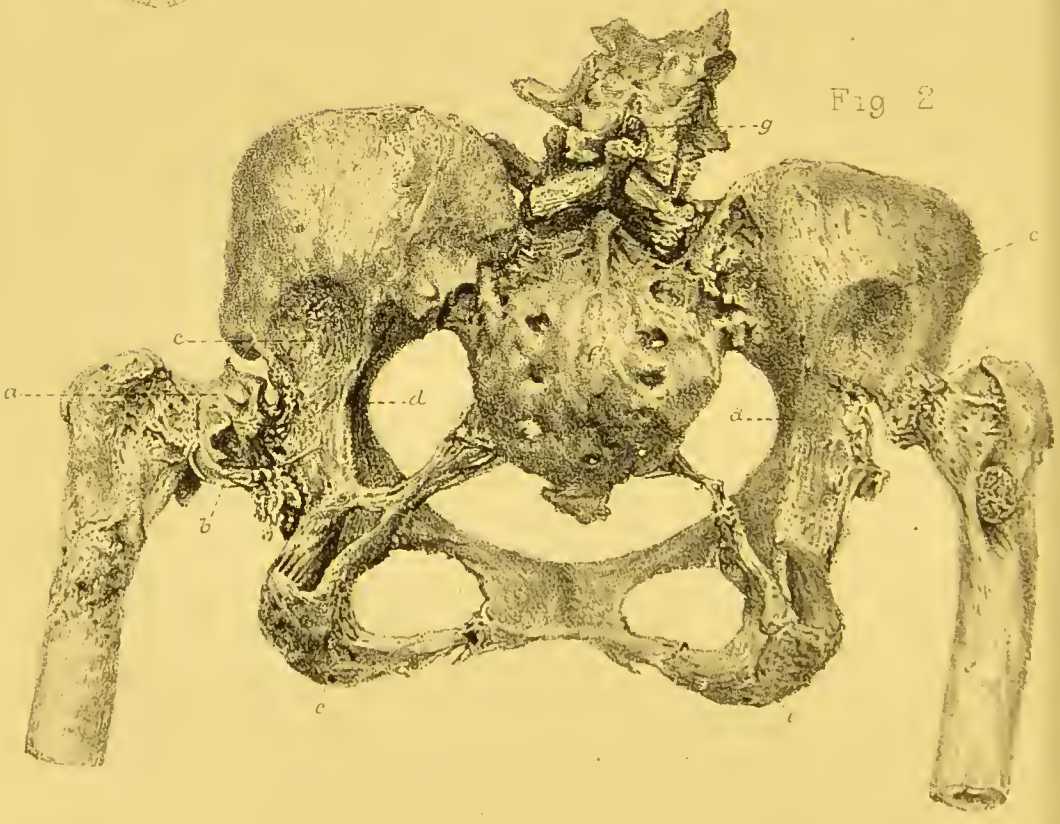
*d.*—Trochanter major.

*e.*—Trochanter minor.

*f.*—Head of the femur lying in the new capsule.

*g.*—New capsule laid open, showing its interior.


Fig 2



## DESCRIPTION OF PLATE XI.

The two figures represented in this Plate are taken from the same specimen as that shown in Plate X. after it had been macerated and allowed to become dry. In the dried condition this specimen was not represented in Dr. Carnochan's work, nor has it been described.

Fig. 1.—Front view of the specimen, exhibiting the alterations in the pelvic bones and altered diameters of the pelvis described in the text; the triangular depression represented by the acetabulum; and the lateral curvature of the spine, consequent upon the unsymmetrical displacement of the head of the femur on the two sides, in addition to the lordosis always occurring in these cases.

*a a.*—Anterior superior spinous process of the ilium on either side.

*b b.*—Anterior inferior spinous process of the ilium on either side, curved outwards.

*c c.*—Deep groove beneath the anterior inferior spinous process on either side, in which the conjoined tendons of the psoas and iliacus muscles played in their altered direction upwards and backwards to their insertion in the small trochanter.

*d d.*—Triangular depression, leading upwards from the obturator foramen representing the acetabulum.

*e e.*—Tuberosity of the ischium on either side, showing their abnormal separation and eversion.

*f f.*—Great trochanter on either side, the right being much higher than the left.

*g.*—The three lower lumbar vertebræ, showing lateral curvature of the spine to the right side, caused by the inequality in the length of the legs by the unsymmetrical displacement of the head of the femur on the two sides.

*h*.—Transverse process on the right side of the fifth lumbar vertebra altered in shape, flattened from above downwards, and horned upwards by resting on the crest of the ilium.

*i*.—Sacral prominence projecting abnormally forwards and narrowing the antero-posterior diameter of the pelvic cavity.

Fig. 2.—Posterior view of the same specimen, showing the position in which the head of the femur was displaced on either side.

*a a*.—Head of the femur on either side. The head of the left femur is much diminished in size and altered in shape, but it is still surrounded by a portion of the capsular ligament, *b*, in a dried and damaged condition. The head of the right femur has been broken away and generally destroyed by rough usage.

*c c*.—Circular depression on either side, in which the head of the femur chiefly rested. On the right side this corresponds nearly to the centre of the dorsum ilii. On the left side the depression is close to the anterior border of the sciatic notch.

*d d*.—Sacro-sciatic notch on either side, elongated and altered in shape.

*e e*.—Tuberosity of the ischium on either side, abnormally separated and everted.

*f*.—The sacrum, which has assumed almost a horizontal position.

*g*.—The three lower lumbar vertebræ, showing a lateral deviation as well as the lordosis always occurring in these cases.

# DIRECTIONS FOR CASE-TAKING.

*Miss S———, æt. 11 years.*

## Congenital Displacement of Right Hip.

*Measure of the base of the Ilio-femoral triangle on both sides.*

| | RIGHT. | LEFT. |
|---|---|---|
| | Inches | Inches |
| *21 March, 1889.* On the right side the Ilio-femoral triangle was obliterated, as the top of the great trochanter rose above the horizontal line drawn from the anterior superior spinous process. In the standing position ... ... ... ... | 0 | $2\frac{1}{4}$ |
| *17 June, 1889.* With moderate extension in the recumbent position | $1\frac{1}{2}$ | $2\frac{1}{4}$ |
| *19 June, 1890.* With moderate extension in the recumbent position | 2 | $2\frac{1}{4}$ |
| *19 May, 1891.* Without extension in the recumbent position ... | $1\frac{1}{4}$ | $2\frac{3}{8}$ |
| With moderate extension in the recumbent position | 2 | |
| T. *7 June, 1892.* Without extension in the recumbent position ... | $1\frac{1}{4}$ | $2\frac{1}{2}$ |
| With slight extension in the recumbent position ... | 2 | |
| S. *16 July, 1892.* Walking apparatus applied. | | |

[Reprinted from the Transactions of the American Orthopedic Association, 1895.]

# OBSERVATIONS ON CONGENITAL DISPLACEMENT (THE SO-CALLED CONGENITAL DISLOCATION) AT THE HIP-JOINT; AND THE SUCCESS OF DR. BUCKMINSTER BROWN'S TREATMENT BY RECUMBENCY WITH EXTENSION FOR TWO YEARS.

By WILLIAM ADAMS, F.R.C.S.,
LONDON, ENGLAND.

The subject upon which I propose to offer a few observations to the members of the American Orthopedic Association is one of special interest to American surgeons, as the treatment is essentially of American origin, and was inaugurated by Dr. Buckminster Brown, of Boston, in the year 1885, when he published his valuable monograph on *Double Congenital Displacement of the Hip*, and recorded a case of double congenital displacement occurring in a child aged four years, in which the treatment by extension with recumbency for two years and three months was eminently successful and well represented in the photographs. In a letter which I received from Dr. Brown he states that the advantage gained had been fairly well maintained, though not quite to the full extent.

It is only by strictly following out the directions given out by Dr. Brown that I have been able successfully to treat a number of these cases.

I am, therefore, anxious to avail myself of the present opportunity of recording in America, with a deep sense of gratitude, the results of Dr. Brown's treatment and any additional information I may have obtained since the subject was first brought to my notice.

It was my good fortune to have this affection first pointed out to me by Dr. Carnochan himself in the year 1844, when he was in

England and demonstrated a case to the surgical staff at St. Thomas's Hospital, when I was curator of the Museum and Demonstrator of Morbid Anatomy. This was the first case diagnosed and described in England. Three lithograph plates of this case—Benjamin G., aged eighteen years—are given in Dr. Carnochan's book.

My attention has ever since been directed to this affection when diagnosing obscure cases of lameness in children, and there are no symptoms to direct the attention to the malformation of the hip-joint until the walking period has commenced, but from that time they steadily increase. I have read three papers on this subject at the meetings of the British Medical Association, in 1885, 1886, and 1889, and have also brought it before the Pathological Society on two occasions, viz., April 19, 1887, and January 29, 1889, with the view of contributing to our knowledge of this affection, which has hitherto attracted such a small share of attention.

In the first paper, in 1885,[1] my tabulated series of sixty cases, forty-eight of which occurred in my private practice, and have therefore a reliable history, completely destroyed the theory of this being an accouchenr's dislocation from violence employed during delivery in breech presentations, which these cases have been assumed to be. Several of the children were born before the accoucheur arrived; and in many instances the labor was described as being easy and natural. It also has important bearings on other statements incorrectly made in surgical text-books. It was a clinical contribution, supplementary to the exhibition by Prof. Bennett, of Dublin, of a recent specimen which was of great interest to me, as I had never seen a recent dissection, and but for this accidental circumstance my table would never have been published.

My second paper, in 1886,[2] was written after I had changed my views with regard to the hopefulness of treatment, consequent upon the publication of a case very successfully treated by the well-known American surgeon, Dr. Buckminster Brown, of Boston, in 1885. The success in this case encouraged me to persevere with recumbency and extension, but I wished to avoid confinement to the bed and

[1] Read at the meeting of the British Medical Association held at Cardiff, July 29, 1885, and published in the British Medical Journal, November 7, 1885.

[2] Read at the meeting of the British Medical Association held at Brighton on August 12, 1886, and published in the British Medical Journal, April 23, 1887.

the elaborate contrivances for extension. I therefore carried out the extension by means of an improved extension-couch, with a movable plane on which the child could be carried out daily in the open air, on a spinal carriage, the extension acting all the time. I drew the design for this couch, and Mr. Ernst constructed it upon the best possible principle.

In my third paper, in 1889,[1] I published the results of Dr. B. Brown's treatment in two cases which had completed the full term of two years' recumbency with extension, and had been walking about for some months, wearing a steel support resembling the American hip-joint instrument of Prof. Sayre. Up to that date nothing could be more satisfactory, so that I hope a substantial advance in treatment has been made without injury to the general health.

To assist in the study of the pathological conditions exhibited in these cases, it appeared to me to be desirable to collect all the specimens from the London Museums, either known or believed to be examples of congenital displacement; and at the meeting of the Pathological Society on April 19, 1887,[2] all the reliable specimens, six in number, in the London Museums, were exhibited, at my suggestion, through the kindness of the gentlemen connected with the different hospitals.

All the specimens exhibited agreed as to the essential deviations in the pelvic bones met with in these cases, viz., the absence of the acetabulum, which is represented only by a flattened, triangular depression, the base of which corresponds to the margin of the obturator foramen; the narrowing and elongation of the innominate bones in the natural situation of the acetabulum; eversion of the tuberosities; alteration in the pelvic diameters; altered direction of the alæ; the presence of a deep groove below the anterior superior spinous process of the ilium, around which the conjoined tendons of the psoas and iliacus muscles play in their altered direction upward and outward toward the small trochanters.

[1] Read at the meeting of the British Medical Association held at Leeds on August 16, 1889, and published in the British Medical Journal, February 22, 1890.

[2] See report of this meeting, with description of the specimens exhibited, in the British Medical Journal, April 23, 1887. Illustrations of all these specimens are given in Plates Nos. 11, 12, 13, 14, 15, 16, and 16a, vol. xxxviii., 1887, of the Transactions of the Pathological Society of London.

The specimens also agreed in exhibiting similar changes in the head of the femur, viz., diminution in size and alteration in shape, such as an irregular flattening; but these changes varied very much in extent in different specimens. The axis of the neck of the femur was in some cases altered in direction as described by Hutton, of Dublin, but this varied very much in degree.

The wet preparations from St. Thomas's and St. Bartholomew's Hospitals also exhibited the dilatation and elongation of the capsular ligament, which becomes greatly thickened and still invests the head of the femur, which has never been found to be external to the capsular ligament. (*Transactions Pathological Society*, London, 1887, vol. xxxviii. Plates 12 and 13.)

At the meeting of the Pathological Society on January 29, 1889,[1] I had also the gratifying opportunity of exhibiting an American specimen of historical interest, as being the one from the dissection of which in the year 1850 the late Dr. Carnochan drew his description of the pathological conditions met with in this affection. These are represented in Plates 6 and 7 in his work published in 1850. Dr. Carnochan died suddenly on October 28, 1887, at the age of seventy years, and had left a request that this specimen and the original drawings, taken during the progress of the dissection, should be sent to me, and they arrived on October 13, 1888. The specimen and drawings are now deposited in the Museum of the Royal College of Surgeons.[2]

Dr. Carnochan read his last paper on this subject at the International Medical Congress held at Washington in September, 1887, about six months previous to his death, and referred to his own early work, and to the recent observations published by myself and others in the *Pathological Society Transactions of London*.

The pathology of this affection is undoubtedly of French origin, and belongs to the celebrated surgeon and physiologist, Baron Dupuytren, from whose invaluable museum Dr. Carnochan gathered much of his knowledge. Baron Dupuytren gave his opinion in favor of malformation, without describing minutely the changes

[1] In the British Medical Journal of February, 1889, there is a report of the proceedings of this meeting, and also the description I gave of Dr. Carnochan's specimen.

[2] The original specimen, which has been allowed to become dry, is also represented in its anterior and posterior aspects in vol. xl., Plates 20 and 21, of the Transactions of the Pathological Society of London, 1889.

in the acetabulum, etc., which I have been enabled to do. Baron Dupuytren also made some important clinical observations.

The clinical history is also of French origin, and largely due to the late Prof. Jules Guérin, the pioneer of subcutaneous surgery, whose clinique Dr. Carnochan sedulously attended.

The introduction into England of our knowledge of congenital displacement of the hip is undoubtedly due to Dr. Carnochan when he exhibited an example of congenital displacement of both hips in a boy aged eighteen years--Benjamin G.—and demonstrated the condition described by Dupuytren and Guérin to the staff of St. Thomas's Hospital in the year 1844, when I happened to be Curator of the Museum and Demonstrator of Morbid Anatomy. A plaster mould of this case, made at the suggestion of the late John Flint South, is still preserved in the Museum of the Hospital, though in a mutilated form.

I now propose to describe four unpublished cases of congenital displacement of the hip, in which Dr. Buckminster Brown's treatment by prolonged recumbency with extension has been carried out for a period of two years or more.

My list of such cases, of which I have careful records, includes six cases, extending from 1886 to 1890. The subsequent cases are not yet complete.

The first two cases on my list, Miss S., in 1886, and Miss W., in 1886, have already been published. The paper in which these cases were described and the principles of treatment explained, with wood engravings of the extension couch in use, was read at the meeting of the British Medical Association, held at Leeds, on August 16, 1889. This paper was subsequently published in the *British Medical Journal*, February 22, 1890, with wood engravings of the extension couch.

Case III. *Congenital displacement of right hip-joint, treated by recumbency with extension for three years.*—Miss S., aged eleven years on June 26, 1889, was sent to me by Dr. Miller, of Blackheath, on March 15, 1889. The objective symptoms of congenital displacement of the right hip-joint were now far advanced, with tilting of the pelvis and severe spinal curvature in the lower dorsal and lumbar regions. She walked with an extreme degree of lameness and obvious deformity.

I had seen this young lady when three years of age, with Dr. Miller, long before the success of Dr. Buckminster Brown's treatment was published in 1885. I appointed a consultation with Dr. Miller, that we might make a careful examination and decide whether Dr. B. Brown's treatment was applicable in a case of such severity at the age of eleven years.

On March 21, 1889, I made a careful examination of the case with Dr. Miller. On the right side it was clear that the head of the femur was resting on the dorsum ilio. The top of the great trochanter rose above the horizontal line drawn from the anterior superior spinous process, so that the ilio-femoral triangle was obliterated.

On the left side the base of the ilio-femoral triangle measured two inches and a quarter. On the right side there was a certain amount of sliding up-and-down movements, to the extent of an inch or more, when a moderate amount of extension was used.

The tilting of the pelvis was considerable, and the spinal curvature in the lumbar region with the convexity to the right side was also very considerable.

Dr. Miller and myself agreed that in order to prevent the threatened evils of increasing deformity the treatment by prolonged recumbency with extension should be carried out; and to this the parents readily assented.

On May 6, 1889, the extension couch was applied by Mr. Ernst, and both Dr. Miller and the mother of our patient devoted their best attention to all the details connected with the management of the extension apparatus.

On June 17, 1889, I paid a visit to this patient and met Dr. Miller. The extension treatment had been borne without any inconvenience, and now we found that with a moderate amount of extension in the recumbent position the base of the ilio-femoral triangle on the right side measured one inch and a half, that on the left side being two inches and a quarter.

It was not necessary for me to see this young lady again until June 19, 1890, when I paid a visit, and met Dr. Miller. He then found that with a very moderate amount of extension in the recumbent position the base of the right ilio-femoral triangle measured

two inches, the left, of course, remaining as before, at two inches and a quarter.

Dr. Miller now observed that the right leg, *i. e.*, on the affected side, appeared to be one inch longer than the left, in the recumbent position. This was evidently due to the severe tilting of the pelvis. We found that the left anterior superior spinous process was nearly two inches above the level of the right. The spinal curvature to the right in the lumbar region was still very severe. Dr. Miller and myself agreed to recommend that weight extension should be applied to both legs, in the hope of correcting the pelvic tilting.

I did not see this young lady again until May 19, 1891, when I again met Dr. Miller. We found now that without extension in the recumbent position the base of the right ilio-femoral triangle measured one inch and a quarter, and there seemed to be no disposition in the head of the femur to ascend, the base of the left triangle remaining the same, viz., two inches and a quarter; the actual shortening was only one inch. This young lady has now completed her two years of recumbency, but we advised that this should be prolonged.

On November 26, 1891, we met again, but found no further change had taken place.

On June 7, 1892, I paid another visit to this young lady, and met Dr. Miller. The base of the right ilio-femoral triangle now measured one inch and a quarter in the recumbent position without any extension. The left, as usual, two inches and a quarter. The pelvic tilting has greatly diminished, and the spinal curvature is very much less. The general health is extremely good and has never been interfered with, but as the case seems to have been at a standstill for some time, and she has completed her three years of recumbency with extension, and is just fourteen years of age, we agreed that a little walking might be very carefully commenced, with a hip-joint extension instrument on the right leg and a raised boot on the left, using crutches and also a felt-jacket to assist in maintaining the general balance of the body and support the spine.

On July 16, 1892, the walking apparatus was applied by Mr. Ernst with Dr. Miller's assistance.

On November 23, 1892, I again visited the patient, and met Dr. Miller. She was now walking about the room, with the hip-joint

instrument and wearing the felt-jacket, and using crutches. Dr. Miller had made a careful measurement and found that the base of the right ilio-femoral triangle fully maintained the improvement.

On June 20, 1893, I went again to see Miss S., and met Dr. Miller. Miss S. has now been walking with the hip-joint instrument and crutches for one year, and we therefore made a careful examination with measurements of the ilio-femoral triangle, and I was glad to find that no ground had been lost.

The base of the right ilio-femoral triangle still measured one inch and a quarter, and the base of the left two inches.

There is no disposition to displacement upward of the head of the right femur when a moderate amount of force is used.

The pelvic tilting is very much diminished, but still when lying down the right leg appears to be about one inch longer than the left.

The muscular development is improving with exercise and massage, and the general health is excellent.

This seems to have been the last careful examination with measurements made in this case.

The subsequent progress was only a very gradual discontinuance of the steel hip-joint apparatus with crutches, and the use of ordinary boots without steel supports, the right boot being raised one inch. The result was extremely satisfactory, considering the age at which the case was undertaken.

CASE IV. *Congenital displacement of left hip treated by recumbency with extension for rather more than two years.*—Miss V. G., aged four years, in May, 1890, was brought to me by Dr. A. H. Buck, of Primrose Hill Road, on May 5, 1890, and presented all the usual objective symptoms of congenital displacement of the left hip-joint. This young lady had been brought to me two years ago, when I correctly diagnosed the case and advised Dr. Buckminster Brown's treatment by recumbency with extension; but the parents were not willing to submit to this. Increasing lameness, with the dread of increasing deformity, however, made them anxious, with the advice of Dr. Buck, to submit to treatment.

Dr. Buck and myself made to-day a careful examination and found that the base of the left ilio-femoral triangle was obliterated by the top of the great trochanter rising a little above the horizontal

line drawn from the anterior superior spinous process. The base of the right ilio-femoral triangle measured one inch and a quarter. The shortening of the left leg, as measured at the knee and ankle-joints, was one inch and a quarter.

The head of the left femur moves up and down with a little extension through nearly one inch.

The head of the femur is displaced upward and a little backward on to the dorsum ilii. The lameness in walking is very great, and she turns the left foot a little outward, but not so much as in many cases.

The left leg is altogether rather smaller than the right, and the muscles comparatively flabby, the glutei included. The left thigh is one inch smaller than the right ; and the left calf is half an inch smaller than the right.

*History.* This was the second child and the labor easy, and presentation natural.

On July 19, 1890, the extension treatment was commenced, and as soon as the mother, a very intelligent lady and devoted to her daughter, had mastered the details of the extension couch, with Dr. Buck's assistance and the help of a trained nurse, this young lady was taken to the seaside.

On November 3, 1890, I visited this patient again, and met Dr. Buck, and now we found that the base of the left ilio-femoral triangle measured one inch, with moderate extension in the recumbent position. The base of the right triangle measured one inch and a quarter.

On February 27, 1891, I again saw this patient with Dr. Buck, and the progress was in every way satisfactory. The base of the left ilio-femoral triangle now measured one inch and a quarter, when a moderate amount of extension was made in the recumbent position ; and the base of the right triangle was also one inch and a quarter.

On July 17, 1891, I met Dr. Buck again in consultation in this case, and we found that the improvement had been well maintained. The base of the left ilio-femoral triangle measured one inch and a quarter with a moderate amount of extension in the recumbent position ; and the base of the right was also one inch and a quarter.

On February 5, 1892, Dr. Buck again made careful examinations

with me, and we found that the base of the left ilio-femoral triangle measured one inch and a quarter, or, we thought, three-eighths, whilst the base of the right ilio-femoral triangle measured one inch and a half (a slight increase from growth). This young lady has had a mild attack of influenza, but otherwise the general health has been extremely good.

On June 29, 1892, I again met Dr. Buck in consultation, and we found that all the improvement had been well sustained after the two years of treatment. The left ilio-femoral triangle still measured an inch and a half without any extension being applied; and the base of the right ilio-femoral triangle measured one inch and a half—a slight gain from growth during the two years of treatment.

The general health is perfect and has never been interfered with.

Dr. Buck and myself agreed that our patient might now begin to walk with a steel support resembling Prof. Sayre's hip-joint instrument, and using crutches.

On July 25, 1892, the walking apparatus was applied, and to this she soon became accustomed, but only for a quarter of an hour for two or three times a day.

In August, 1892, Miss. G. gradually increased her walking until we met again.

On November 2, 1892, Dr. Buck and myself again examined our patient, and found that the base of the left ilio-femoral triangle measured one inch and three-eighths; that of the right measured one inch and six-eighths.

We also found that there was no movement of the head of the left femur upward, independently of the pelvis, so that all the muscular and fibrous structures had become accommodated to the improved position of the head of the femur. The glutei muscles on the left side are feeble, and we advised more massage in this region.

On April 25, 1893, I again visited this patient and met Dr. Buck. We found that the base of the left ilio-femoral triangle was still one inch and a quarter, whilst that of the right was one inch and three-quarters.

She has now been ten months with the hip-joint instrument and crutches. We agreed that this might be gradually diminished.

On February 14, 1894, I went to see this young lady again, un-

fortunately without meeting my friend, Dr. Buck, who died a short time since from an acute febrile attack.

Miss G. has now been walking with the hip-joint instrument and crutches for a year, but the raised boot and iron patten have been discontinued. She still sleeps on the extension-couch with slight extension. The base of the left ilio-femoral triangle measures one inch and a quarter, and that of the right one inch and a half. The shortening of the left leg, as measured at the malleoli, is rather less than half an inch.

On June 29, 1894, I went again to see Miss G., who is steadily improving, and I directed that she might leave off the instrument half the day, and the crutches gradually. The measurements the same as before. There is no spinal curvature whatever, and no tilting of the pelvis. The shortening of the leg seems only to be a quarter of an inch.

On July 23, 1895, this young lady was brought to see me, and it is now five years since the treatment commenced. Nothing could be more satisfactory than the result gained. She is wearing an ordinary boot, raised only a quarter of an inch inside. She walks with only a slight limp, and this seems to be chiefly due to some loss of the flexibility at the ankle-joint caused by a slight contraction of the Achilles tendon. I have seen this in one or two other instances, but it always yields to massage with passive movements of flexion and extension.

There is no spinal curvature, nor is there any tilting of the pelvis. The base of the left ilio-femoral triangle measures one inch and an eighth, and that of the right one inch and a half.

Case V. *Congenital displacement of the left hip-joint treated by recumbency with extension for nearly three years.*—Miss D. H., aged six years, in February, 1890, was brought to me on May 6, 1890.

All the objective symptoms of the congenital displacement of the left hip-joint. The ilio-femoral triangle on the left side was obliterated, as the top of the great trochanter rose a little above the level of the horizontal line drawn from the anterior superior spinous process.

The base of the ilio-femoral triangle on the right side measured one inch and a quarter.

The shortening of the left leg is about one inch and a half, and she wears a boot raised one inch and a half. The lameness in walking is very considerable.

*History.* This was a first child, but the labor was easy, with a natural head-presentation.

The head of the left thigh bone was found to move upward and downward to the extent of one inch or more.

I advised treatment by recumbency with extension.

On June 26, 1890, the extension-couch was applied and the treatment commenced, the case being carefully watched and attended to by Dr. Charles Edmund Aikin; a good nurse was also secured, and an aunt devoted constant attention to the case. It has been my good fortune, with one exception, to attend these cases in conjunction with medical men who have taken up the treatment with enthusiasm, and to this circumstance much of the good results may be attributed.

On August 6, 1890, I saw this patient with Dr. Aikin. The treatment has been well borne, and the base of the left ilio-femoral triangle now measured half an inch; that of the right being one inch and a quarter.

On November 28, 1890, I met Dr. Aikin again in this case, and was glad to find some improvement going on. The base of the left ilio-femoral triangle measured three-quarters of an inch; the right being one inch and a quarter.

On May 12, 1891, I saw this patient again with Dr. Aikin. The base of the left ilio-femoral triangle measured one inch; the right being one inch and a quarter. The spinal curvature was much diminished.

On December 8, 1891, I met Dr. Aikin again and we found some improvement. The base of the left ilio-femoral triangle measured very nearly one inch; the right being one inch and a quarter.

On March 28, 1892, Dr. Aikin and myself examined this patient again, and found the measurement remained the same as before. The subsequent progress of this case was satisfactory, and on November 30, 1892, she began to walk with steel supports and crutches, and gradually improved, walking only with a slight limp.

CASE VI. *Congenital displacement of the left hip-joint treated*

*by extension, with recumbency, for three years.*—Miss R., aged seven years, the sixth case on my list, was brought to me on June 4, 1890, and the case was evidently one of congenital displacement of the head of the femur on the left side (the so-called congenital dislocation). All the usual objective symptoms were present, such as the limping gait, with the foot everted, etc.

In the standing position, the ilio-femoral triangle on the left side was obliterated by the great trochanter rising above the horizontal line. The base of the ilio-femoral triangle on the right side measured one inch and a half.

In the lying-down position, the base of the left ilio-femoral triangle measured half an inch, with a limited range of motion in the up and down direction; abduction and rotation movements were limited.

*History.* This was the fifth child; it was a quick labor, and the medical man did not arrive till after the child was born; the presentation was said to be natural.

*Treatment.* I advised prolonged recumbency with extension on my improved couch.

The extension-couch was supplied by Mr. Ernst on July 5, 1890, and the treatment commenced, gradually for a few weeks. This young lady soon became accustomed to the recumbency and extension treatment, which was most carefully carried out by the wife of the clergyman in whose house she had been placed to live at the seaside, fifty miles from London. Visits at long intervals were therefore only necessary. At about the ninth month it was noticed that the mobility at the hip was greatly diminished, but I have no memorandum of the visit.

On July 22, 1891, Miss R. was brought to London, and the progress made was in every respect satisfactory. The head of the femur had descended toward its natural position, and the difference in the measurement at the base of the ilio-femoral triangle was diminished. Her general health has been thoroughly well maintained. She was brought to London on the extension-couch in the train, and in an omnibus-carriage from the station to my house.

On April 8, 1892, Miss R. was again brought to London. The improvement has increased. The base of the left ilio-femoral triangle now measures one inch and a quarter, and on the right side

the base measures two inches. When lying down the ankles are on the same level, so that no shortening is apparent, but in consequence of the pelvic tilting caused by the spinal curvature in the lumbar and lower dorsal region, with the convexity to the left, the right anterior superior spinous process is raised three-quarters of an inch higher than the corresponding process on the left side. The general health is excellent.

On July 22, 1892, I made another careful examination, and the base of the left ilio-femoral triangle now measured one inch and three-quarters, the right being two and a quarter. The pelvic tilting and the spinal curvature are both very much diminished.

On October 28, 1892, I found some further improvement; the base of the left ilio-femoral triangle measured one inch and seven-eighths, and the right two inches and a quarter. The tilting of the pelvis and spinal curvature have both diminished, but are not removed.

As Miss R. has now been two years and three months under the recumbency and extension treatment, I thought that a change in the treatment might be commenced, as it was doubtful how long this young lady would be allowed to remain in England, and the fixation of the head of the femur in its improved position seemed to be fairly complete. I found that when direct pressure was made from the foot upward, the knees being held straight, there was no disposition to displacement upward, *i. e.*, no motion upward independently of the pelvis. I therefore ordered the usual steel support for walking to be prepared. If, however, it should be decided that this young lady could remain a year or more in England, I recommended prolongation of the recumbency and extension treatment on account of the spinal curvature and tilting of the pelvis.

On December 16, 1892, Mr. Ernst applied the walking apparatus, and on a light, experimental trip she made a good start. I only allowed her to walk for ten minutes two or three times a day.

On April 3, 1893, Miss R. was brought to London, and I found that the improvement gained had been fully maintained. A little walking exercise with the steel support seemed to be a relief, and the massage over the gluteal region and the muscles of the thigh and inner side of the left knee improved the muscular development.

On July 14, 1893, the report was the same.

On Oetober 20, 1893, there appeared to be a still further gain in museular development, while the hip-joint measurements were equally good.

On April 24, 1894, Miss R. was brought to see me, and I was glad to find the improved eondition had been fully maintained.

No precise measurements of the base of the ilio-femoral triangle were made, as I was in ill health at the time, having suffered from three attacks of influenza in 1891, 1892, and 1893, and a severe domestic affliction in January, 1894.

On July 10, 1894, Miss R. was brought to see me, and I made a eareful examination with measurements of the base of the ilio-femoral triangle. The shortening of the left leg was now only a quarter of an inch. The base of the left ilio-triangle measured one inch and three-quarters ; that of the right being two inehes.

On October 4, 1894, Miss R. was brought to me. I found all the measurements the same as in July. The spinal curvature had so much diminished that when lying down it can hardly be detected. The tilting of the pelvis is now very slight. She walks one hour and a half a day ; half an hour each time, still using the hip-joint extension instrument, and walks with two sticks ; she uses her crutehes very little. She also sits in a chair for an hour and a half every day. She still sleeps on the extension-eouch. She has always used the bed-pan up to the present time, but this is now to be discontinued.

On October 16, 1894, Miss R. eame again to see me. I allowed her to walk to-day without any steel support, but using two sticks ; left boot raised a quarter of an inch. The base of the left ilio-femoral triangle measured one ineh and a half and the right two inches. The hip-joint seems to be strong and very perfeet. I allowed her to walk for a quarter of an hour without steels, but much more freely with steels.

On October 24, 1894, I again saw Miss R. Hip-joint seems to be very perfeet and stands work well.

On November 8, 1894, hip-joint very strong. I ordered walking without steels to be inereased to half an hour twiee a day

January 16, 1895. Miss R. paid visit to-day. The improvement gained in the position of the left hip-joint has been well maintained. The muscular development has been inereased by the exer-

cise allowed in walking, and also by shampooing and special movements judiciously applied.

The spinal curvature seems almost to have disappeared. The general health is excellent.

April 5, 1895. All the conditions are as good as in the last report, and there does not seem to be more than a quarter of an inch of shortening. The ilio-femoral triangles measure as before.

To-day I noticed for the first time a slight inclination to knock-knee on the left (the affected) side. Miss R. is a very tall girl, and comes of a tall Irish family, and as this knee is evidently not fit to bear the strain of the full weight of the body in walking, I ordered the steel support to be used for part of the day, especially when walking with only two sticks; and I also ordered additional shampooing to the inner side of the knee-joint.

June 5, 1895. Miss R., aged twelve years on March 10th last, was to-day very carefully examined by Mr. Stephen Paget and myself, and this being the last visit before leaving England, Sir James Paget and Mr. T. Bryant were invited to the consultation, but were unable to attend. Mr. Bryant, whose name is so intimately associated with the ilio-femoral triangle as an aid to the diagnosis of fracture of the neck of the thigh bone, would have been much pleased with the result of the treatment in this case. Miss R. has now passed through a treatment of nearly five years' duration—three years of complete recumbency with extension—prolonged in consequence of severe spinal curvature with rotation in the lumbar region, and after this the subsequent changes were made very slowly.

The report on June 5, 1895, runs as follows :

In the recumbent position we found the base of the left ilio-femoral triangle, *i. e.*, on the affected side, to measure rather more than one inch and a quarter; and the base of the right ilio-femoral triangle, *i. e.*, on the healthy side, measured two inches. The difference was, therefore, about half an inch.

In the erect position, without any mechanical support, and bearing the weight rather lightly on the left leg, this measurement was fully maintained. The head of the femur had no disposition to ascend. The test seemed to be sufficient, and we did not allow her

to walk without the steel support, in consequence of the weakness of the left knee-joint.

The fixation of the head of the femur, very nearly in its natural position, seemed to be perfect, and all the movements at the hip-joint are also very perfect, so that the muscular and other structures have adapted themselves to the improved position.

Miss R. has good voluntary power of flexion and extension from the hip-joint; and the movements of abduction, adduction, and rotation are also very good. Mr. Paget tested all these.

The glutei and other hip-joint muscles have much improved by massage and the exercise of walking, which she is now allowed to take freely with the steel support and two sticks, or using a pair of crutches when she walks without the steel support. This seems to be prudent in consequence of the weakness of the left knee-joint and inclination to knock-knee. She is a very tall girl for her age, and knock-knee might easily increase without support, as well as massage. She still continues to wear the felt-jacket, to check any disposition to lean to the left side.

The spinal curvature in the lower dorsal and lumbar regions had been, to all external appearances, completely cured by the long-continued recumbency. No evidence of rotation existed, *i. e.*, no prominence of the lumbar muscles on one side and depression of the other, and the spinous processes were quite straight.

No tilting of the pelvis existed; the anterior superior spinous processes on either side were quite on a horizontal line.

The general health has never suffered by the prolonged recumbency, and she now looks the picture of health and strength. Through the whole treatment she was placed to live in the house of a clergyman by the seaside, whose wife devoted unbounded attention to all the details of treatment, and every day, weather permitting, she was drawn out in a spinal-carriage, the extension being continued.

This was the last visit paid by Miss R. before leaving England for her home in Ireland.

Nothing could be more satisfactory than the results of Dr. Buckminster Brown's treatment in this case.